

## A REVIEW OF *CALLISTOMYIA* BEZZI AND RELATED GENERA (DIPTERA: TEPHRITIDAE: TRYPETINAE)

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### Abstract

The new tribe Callistomyiini is proposed for the Indo-Australian genera *Callistomyia* Bezzi and *Alincocallistomyia* Hardy, plus the African genus *Sosiopsila* Bezzi. This tribe might also include the Neotropical genera *Alujamyia* Norrbom, *Molynocoelia* Giglio-Tos and *Pseudophorellia* Lima. The African *Sosiopsila trisetosa* Bezzi, stat. rev., is removed from synonymy with *S. metadacus* (Speiser). The identity of the Indian *Dacus klugii* Wiedemann is discussed, with the species removed from *Callistomyia* and placed in the new combination *Euphranta klugii* (Wiedemann), close to *E. apicalis* Hendel. A key to the three genera and eight species known from the Old World is included.

### Introduction

The Indo-Australian genera *Callistomyia* Bezzi and *Alincocallistomyia* Hardy have had a chequered taxonomic history. Currently included in the otherwise Neotropical tribe Hexachaetini (e.g. Korneyev 1999, Hancock and Drew 2003, Agarwal and Sueyoshi 2005), they were previously placed in the tribes Acanthonevrini (Hardy 1986, 1988) or Trypetini (Hancock and Drew 1994, Permkam and Hancock 1995, Wang 1998). However, a recent study by Norrbom (2006) suggests that they represent a distinct clade closely related to the Neotropical genera *Alujamyia* Norrbom, *Molynocoelia* Giglio-Tos and *Pseudophorellia* Lima, with *Hexachaeta* Loew forming a separate clade with *Anastrepha* Schiner and *Toxotrypana* Gerstaecker (the latter three genera all placed in tribe Toxotrypanini). Norrbom (2006) suggested that they might also be related to tribe Adramini; however, all lack long, fine hairs on the anatergite, a key defining character for that tribe and (as indicated by Norrbom 2006) a sister-group relationship with the Toxotrypanini seems more certain.

Tribal placement of the African genus *Sosiopsila* Bezzi has been equally uncertain. Hancock (1986) transferred it from the Adramini to tribe Phytalmiini but the yellow dorsal stripe on the anepisternum and the lack of preapical setae on the aculeus suggest that this was incorrect. It was returned tentatively to [or near] the Adramini by Korneyev (1999) and Hancock (2003). However, it also lacks long, fine hairs on the anatergite and its inclusion within the Adramini remained doubtful. The shape and structure of the spermathecae, the male fifth sternite and the aedeagus closely resemble those of *Callistomyia* (see Munro 1984, Hardy 1973, 1974, Permkam and Hancock 1995), the unusually shaped, apically trilobed aculeus is similar to that seen in *Pseudophorellia* (see Hancock 1986, Norrbom 2006), while the shape of the epandrium and proctiger resemble that of *Molynocoelia* (see Munro 1984, Norrbom 2006). *Sosiopsila* shares with *Alincocallistomyia* and *Callistomyia* the pubescent arista, ocellar setae vestigial or absent, vein  $R_{4+5}$

extensively setose and an apically pointed aculeus without preapical setae. *Sosiopsila* has only one pair of scutellar setae (2-3 pairs in the other genera) but this appears to be the medial pair, with the basal and apical pairs lost. *Sosiopsila* is here tentatively included with the latter two genera within the new tribe Callistomyiini, which might also include the *Molynocoelia* group of genera (see Norrbom 2006).

#### Subfamily TRYPETINAE

#### Tribe CALLISTOMYIINI nov.

Type genus *Callistomyia* Bezzi.

This tribe is proposed to accommodate a group of apparently related genera that lack defining characters of other tribes currently included in the subfamily Trypetinae (see Korneyev 1999, Norrbom 2006). Two Indo-Australian genera (*Alincocallistomyia* Hardy, *Callistomyia* Bezzi) and one African genus (*Sosiopsila* Bezzi) are included. Three Neotropical genera (*Alujamyia* Norrbom, *Molynocoelia* Giglio-Tos and *Pseudophorellia* Lima) might also belong here.

*Diagnosis.* Head generally with 1-2 pairs of orbital setae and 2-3 pairs of frontal setae; ocellars weak or absent; all setae dark and acuminate; arista usually pubescent; occiput swollen ventrally. Scutum generally fulvous to reddish, with or without dark spots or vittae; anepisternum usually with a yellow dorsal band from postpronotal lobe to wing base; anatergite without long, fine hairs; postpronotal, presutural, dorsocentral and prescutellar acrostichal setae present or absent; dorsocentrals, when present, posterior in position, close to line of postalars; intrapostalars lacking; 1-3 pairs of scutellar setae. Legs often with a second, smaller spine at apex of mid tibia and with or without two rows of ventral spinules on mid and hind femora. Wing usually banded but pattern sometimes modified or reduced; veins R<sub>1</sub> and R<sub>4+5</sub> extensively setose; no distinct costal seta at base of pterostigma; pterostigma usually narrow and apically acute; vein M not distinctly curved upwards at apex; cell *bcu* weakly or strongly acuminate but apical extension not basally constricted. Abdominal tergites not fused, often with dark spots or bands but without shiny black bullae; aculeus apically acute, sometimes trilobed with the preapical lobes also acute, and without preapical setae; eversible membrane with ventral spicules much more extensive than dorsal spicules (Norrbom 2006: unchecked for *Sosiopsila*); 2-3 spermathecae, usually round or mushroom-shaped.

#### The identity of '*Callistomyia*' *klugii*

*Dacus klugii* Wiedemann was described from 'India orient[alis]' by Wiedemann (1824) ['orientalis' signifying India proper rather than the West Indies]. Bezzi (1913) tentatively suggested it might belong in *Callistomyia* and that was followed, without further comment, by Hardy (1951) and all subsequent authors. No additional specimens have been referred to it since its

original description and neither Senior-White (1924) nor Kapoor (1970) mentioned it. However, the name has been recognised as valid in several recent catalogues (Hardy 1977, Kapoor 1993, Norrbom *et al.* 1999, Agarwal and Sueyoshi 2005) and in at least three systematic keys (Hardy 1951, 1974, Kapoor 1993).

The type (in the Zoological Museum, University of Copenhagen) is possibly from the Calcutta district of West Bengal, where Dagobert Daldorf (the likely collector) was based between 1798 and his death in 1802 (Courtice 2006). Unfortunately, I have not been able to obtain any additional information on the type but Wiedemann's (1830) description suggests it belongs in genus *Euphranta* Loew. Note that the basal, transverse wing band enclosing crossvein BM-Cu is [dark] brown, not yellowish as in *Callistomyia*, and that the hyaline distal areas are 'whitish'. It appears closest to, and is possibly synonymous with, *E. apicalis* Hendel, seemingly differing only in the apparent absence of dark brown vittae on the scutum and a smaller hyaline apical spot on the wing (confined to cell  $r_{4+5}$ ).

A relationship with *Euphranta apicalis*, a species widespread in southeast Asia but not yet recorded from India, is suggested by size and overall body colour, apparent similarities in wing pattern and the presence of a pair of blackish facial spots (Wiedemann 1830, Hendel 1915). However, the nearest recorded locality for *E. apicalis* is the Moulmein district of southern Burma (Hering 1938, Wang 1998) and, in the absence of additional Indian material and without further information on the type, formal synonymy would be premature. Therefore, *Euphranta klugii* (Wiedemann, 1824), comb. n. and *Euphranta apicalis* Hendel, 1915 are regarded here as separate species placed in the *apicalis* group of Hancock and Drew (2004).

It should be noted that, prior to Daldorf's return to India in 1798, he also collected in Sumatra (Courtice 2006), where *E. apicalis* is known to occur (Hancock and Drew 2004); however, given the original type locality of 'India [of the East]' (Wiedemann 1824), the Calcutta district is a more likely provenance. Wiedemann (1830) subsequently misstated the type locality as 'Ostindien', leading some authors (*e.g.* Hardy 1951) to incorrectly interpret the type locality as 'East Indies' [Indonesia].

### Key to Old World genera and species of tribe Callistomyiini

- 1 One pair of scutellar setae; postpronotal and dorsocentral setae absent; mid and hind femora without rows of black ventral spinules; wing without a transverse band across R-M crossvein; cell bcu weakly acute apically (Africa) ..... *Sosiopsila* Bezzi ... 2
- Two or three pairs of scutellar setae; postpronotal and dorsocentral setae present; mid and hind femora with rows of black ventral spinules; wing with a transverse band across R-M crossvein; cell bcu strongly acute apically (Indo-Australia) ..... 4

- 2 Postnotum fulvous, at most with a slight medial darkening; apical wing spot extending narrowly (for about 1/3 length) below vein  $R_{4+5}$  (South Africa) ..... *S. rotunda* Munro
- Postnotum with a distinct medial black or brown patch; apical wing spot extending broadly (for 1/2-2/3 length) below vein  $R_{4+5}$  ..... 3
- 3 Costal band in cell  $r_1$  narrow but distinct, wider than costal vein (Nigeria to Ethiopia and ?Kenya) ..... *S. metadacus* (Speiser)
- Costal band in cell  $r_1$  absent or vestigial, no wider than costal vein (Malawi to South Africa) ..... *S. trisetosa* Bezzi
- 4 Three pairs of scutellar setae; prescutellar setae present; no distinct propleural seta (Borneo) ..... *Alincocallistomyia imitator* Hardy
- Two pairs of scutellar setae; prescutellar setae absent; a distinct propleural seta present ..... *Callistomyia* Bezzi ... 5
- 5 Wing with large apical spot broadly connected in posterior half of cell dm with transverse band across R-M crossvein; abdomen without black transverse bands on terga III-V [present or absent on tergite II] (northern Australia, southern Papua New Guinea) ..... *C. horni* Hendel
- Wing with large apical spot broadly isolated or at most narrowly connected along vein  $Cu_1$  with transverse band across R-M crossvein; abdomen usually with black transverse bands on terga II-V ..... 6
- 6 Wing with large apical spot narrowly connected with transverse band along vein  $Cu_1$  (Philippines) ..... *C. icarus* (Osten Sacken)
- Wing with large apical spot broadly separated from transverse band ..... 7
- 7 Wing with large apical spot diffusely connected with costal band along apical margin of cell  $r_{2+3}$  (India and China to western Indonesia) ..... *C. pavonina* Bezzi
- Wing with large apical spot not connected with costal band along apical margin of cell  $r_{2+3}$  (eastern Indonesia, northern Papua New Guinea) ..... *C. flavilabris* Hering

## Systematics

### Genus *ALINCOCALLISTOMYIA* Hardy

*Alincocallistomyia* Hardy, 1986: 28. Type species *A. imitator* Hardy.

One species, from the island of Borneo. Larval hosts unknown.

### *Alincocallistomyia imitator* Hardy

*Alincocallistomyia imitator* Hardy, 1986: 29. (near Tawau, Sabah, Malaysia).

*Distribution.* Known only from Sabah, east Malaysia.

Genus *CALLISTOMYIA* Bezzi

*Callistomyia* Bezzi, 1913: 124. Type species *C. pavonina* Bezzi.

Four allopatric Indo-Australian species. Larval hosts Rutaceae (subfamily Aurantiodeae). For a habitus illustration of the type species, see Hancock and Drew (1994). The Australian *C. horni* has a distinctive wing pattern but the other three species (*C. flavilabris*, *C. icarus* and *C. pavonina*) are only weakly separable.

*Callistomyia flavilabris* Hering

*Callistomyia flavilabris* Hering, 1953: 513. (Misool, Indonesia).

*Distribution.* Eastern Indonesia (Maluku Province: Misool) and northern Papua New Guinea (Madang Province).

*Host plant.* Berries of *Wenzelia dolichophylla* (Rutaceae) (Hancock and Drew 2003).

*Callistomyia horni* Hendel

*Callistomyia horni* Hendel, 1928: 361. (Palmerston [Darwin], Northern Territory).

*Distribution.* Southern Papua New Guinea (Central Province) and Australia (northern areas of Western Australia, Northern Territory and Queensland).

*Host plants.* Berries of *Clausena*, *Glycosmis* and *Micromelum* species (Rutaceae) (Permkam and Hancock 1995).

*Callistomyia icarus* (Osten Sacken)

*Dacus icarus* Osten Sacken, 1882: 224. (Philippines).

*Callistomyia icarus*: Hardy, 1974: 160. (Luzon).

*Distribution.* Philippines (Luzon).

*Host plants.* None recorded.

*Callistomyia pavonina* Bezzi

*Callistomyia pavonina* Bezzi, 1913: 125. (NE India).

*Callistomyia flavilabris*: Hardy, 1973: 177-178. (Malaysia). Misidentification.

In specimens previously referred to *C. pavonina*, the dark facial spot is variable in intensity and is often absent. Malaysian specimens of '*C. flavilabris*' recorded by Hardy (1973) were regarded as examples of *C. pavonina* with the facial spot absent by Hancock and Drew (1994).

*Distribution.* India, Sri Lanka, China, Taiwan, Thailand, Laos, Vietnam, west Malaysia and western Indonesia (Sumatra, Java).

*Host plants.* Berries of *Clausena* and *Glycosmis* species (Rutaceae) (Hancock and Drew 1994).

Genus *SOSIOPSILA* Bezzi

*Sosiopsila* Bezzi, 1920: 214. Type species *S. trisetosa* Bezzi.

Three poorly differentiated (and apparently allopatric) African species that are probably little more than subspecies. Larval hosts unknown. Munro (1984) suggested that larvae were probably stem borers, but that is unlikely to be the case. For a habitus illustration of the type species, see Hancock (1986, as *metadacus*).

*Sosiopsila metadacus* (Speiser)

*Polystodes metadacus* Speiser, 1915: 99. (Zela, Mandarra Mts, Cameroon).

*Sosiopsila metadacus*: Hancock, 1986: 304. (Cameroon).

*Distribution*. Known from northern Nigeria, Cameroon and Ethiopia (material in The Natural History Museum, London) and possibly western Kenya (Copeland *et al.* 2005, as *Sosiopsila* sp. cf. *metadacus*).

*Sosiopsila rotunda* Munro

*Sosiopsila rotunda* Munro, 1933: 26. (Rosslyn, South Africa).

*Distribution*. Known from northern and eastern South Africa (North-West Province: Rosslyn and Rustenburg; KwaZulu-Natal: Durban).

*Sosiopsila trisetosa* Bezzi; **stat. rev.**

*Sosiopsila trisetosa* Bezzi, 1920: 215. (East of Mt Mlanje, Mozambique).

*Sosiopsila metadacus*: Hancock, 1986: 303-304. (Zimbabwe). Misidentification.

This species was placed as a synonym of *S. metadacus* by Hancock (1986). However, examination of further material (in The Natural History Museum, London) suggests that the variation observed (particularly the presence or absence of a distinct costal band) is at least partly geographical.

*Distribution*. Known from southern Malawi, Mozambique, Zimbabwe and northeastern South Africa (Mpumalanga Province: Nelspruit).

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